

## Appendix A

### RF Test Data for BT LE V5.1(DTS) (Conducted Measurement)

Product Name: Wi-Fi & Bluetooth Module

Trade Mark: Dialog

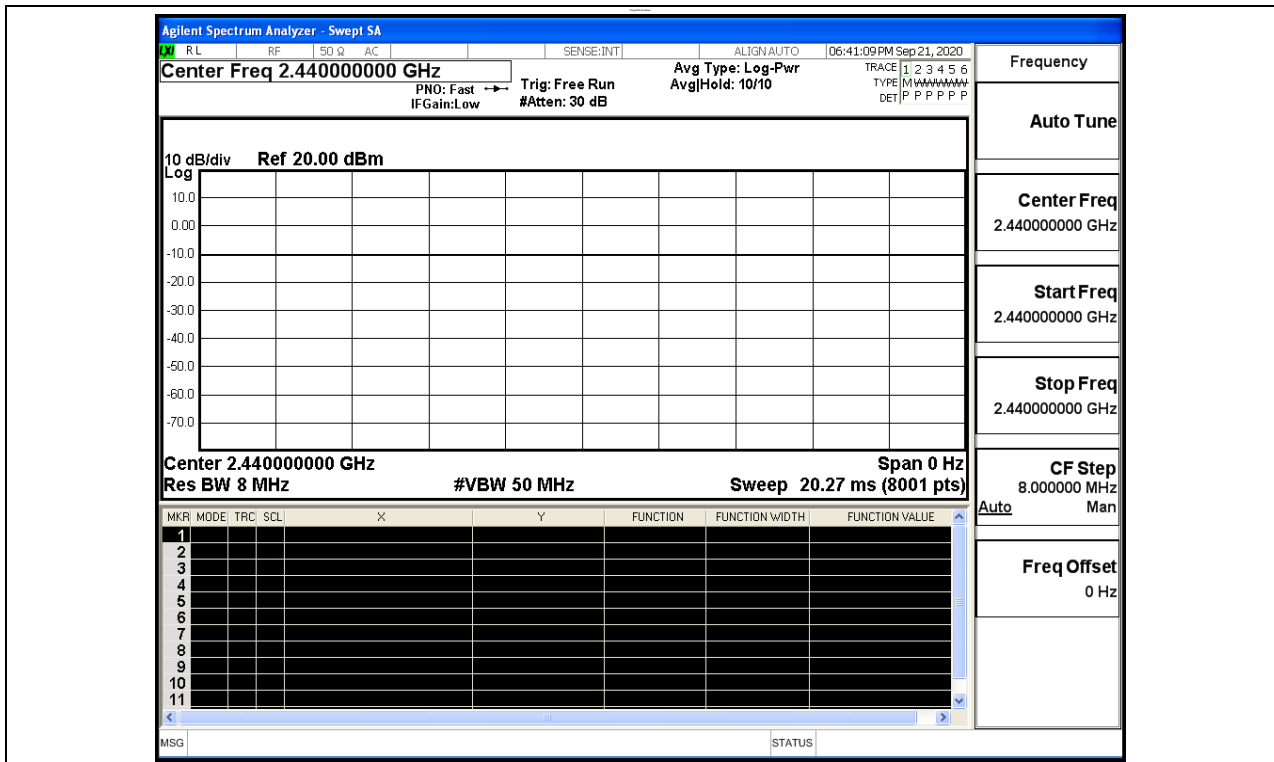
Test Model: DA16600MOD-AAC4WA32

#### Environmental Conditions

Temperature:	23.1 ° C
Relative Humidity:	54.5%
ATM Pressure:	100.0 kPa
Test Engineer:	Carl Fu
Supervised by:	Li Huan

#### A.1 Duty Cycle

Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
BT LE	2440	Ant1	100	PASS



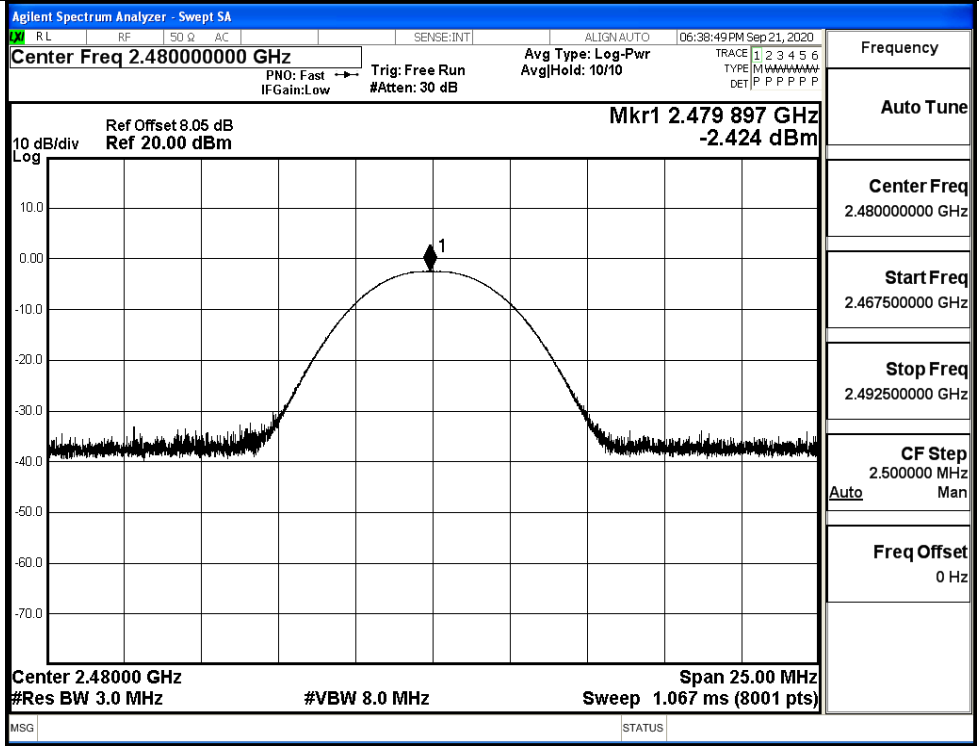
### A.2 Maximum Conducted Peak Output Power

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	-2.601	30	PASS
BT LE	MCH	-2.526	30	PASS
BT LE	HCH	-2.424	30	PASS

Test Graphs

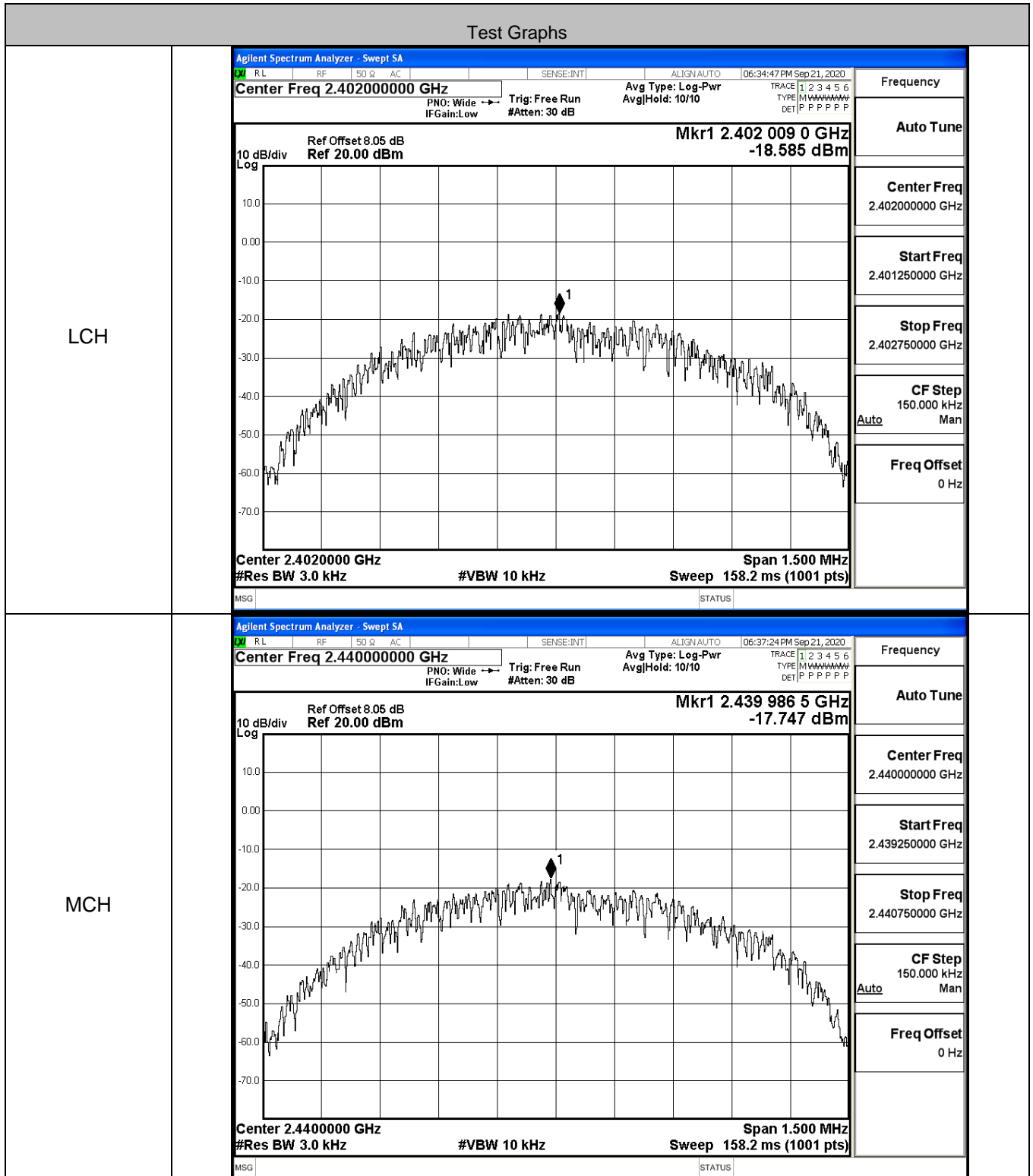
LCH	<p>Agilent Spectrum Analyzer - Swept SA                  Center Freq 2.40200000 GHz                  Mkr1 2.402147 GHz -2.601 dBm                  Ref Offset 8.05 dB Ref 20.00 dBm                  10 dB/div Log                  Center 2.40200 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Span 25.00 MHz Sweep 1.067 ms (8001 pts)</p>	Frequency Auto Tune Center Freq 2.40200000 GHz Start Freq 2.389500000 GHz Stop Freq 2.414500000 GHz CF Step 2.500000 MHz Freq Offset 0 Hz
MCH	<p>Agilent Spectrum Analyzer - Swept SA                  Center Freq 2.44000000 GHz                  Mkr1 2.443986 GHz -2.526 dBm                  Ref Offset 8.05 dB Ref 20.00 dBm                  10 dB/div Log                  Center 2.44000 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Span 25.00 MHz Sweep 1.067 ms (8001 pts)</p>	Frequency Auto Tune Center Freq 2.44000000 GHz Start Freq 2.427500000 GHz Stop Freq 2.452500000 GHz CF Step 2.500000 MHz Freq Offset 0 Hz

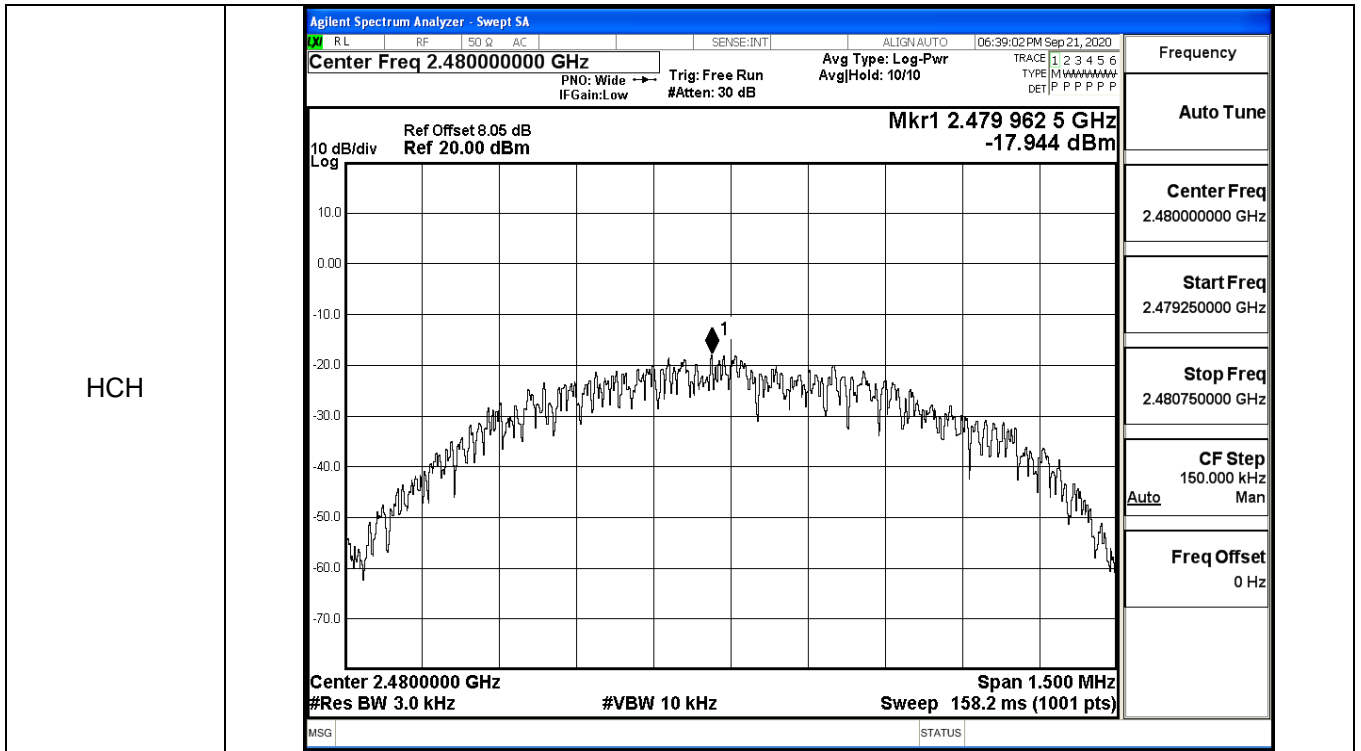
HCH



### A.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-18.585	8	PASS
BT LE	MCH	-17.747	8	PASS
BT LE	HCH	-17.944	8	PASS

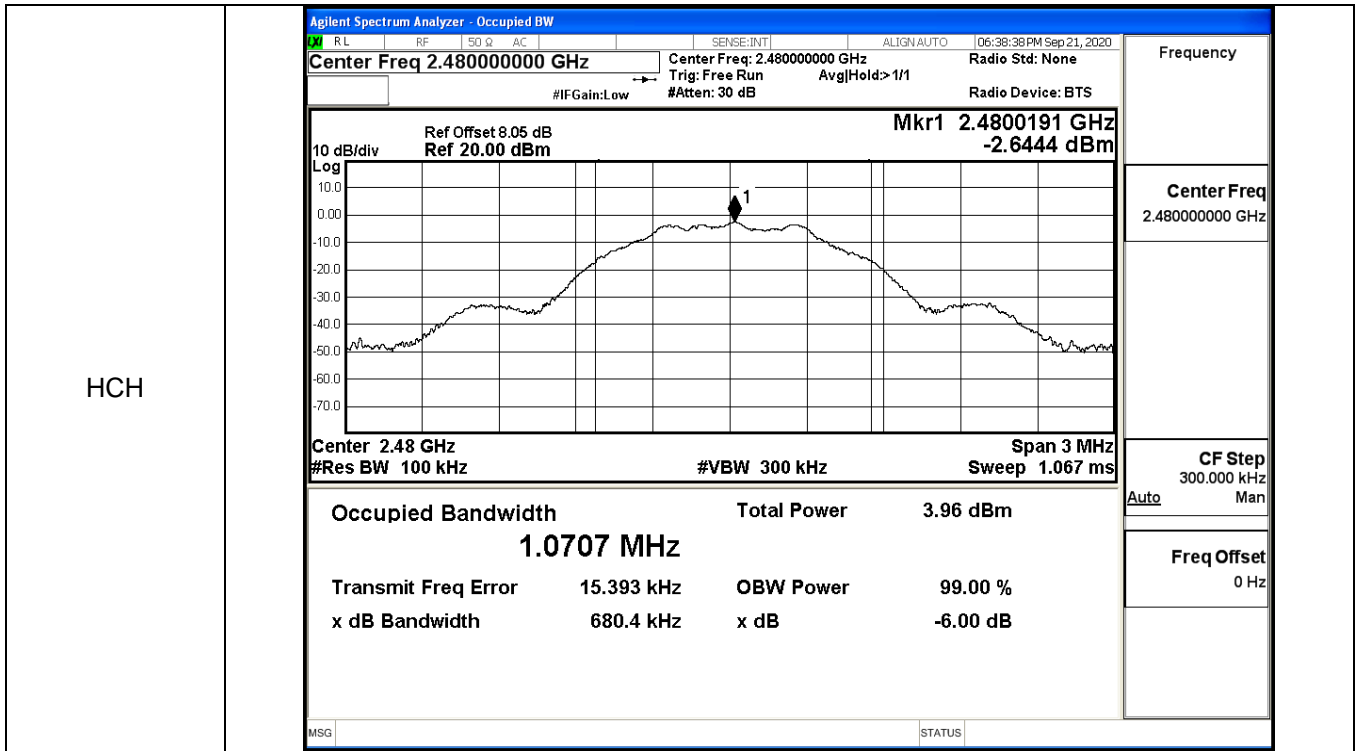




**A.4 6dB Bandwidth**

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6632	≥0.5	PASS
BT LE	MCH	0.6715	≥0.5	PASS
BT LE	HCH	0.6804	≥0.5	PASS

Test Graphs																			
LCH	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: small; margin: 0;">RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 06:34:22 PM Sep 21, 2020</p> <p style="margin: 0;">Center Freq: 2.402000000 GHz Center Freq: 2.402000000 GHz Radio Std: None                      Trig: Free Run AvgHold: &gt;1/1                      #IFGain: Low #Atten: 30 dB Radio Device: BTS</p> <div style="display: flex; justify-content: space-between;"> <div style="font-size: x-small;">                         10 dB/div                          Log                          Ref Offset 8.05 dB                          Ref 20.00 dBm                     </div> <div style="text-align: right;">                         Mkr1 2.4020131 GHz                          -2.7609 dBm                     </div> </div> <div style="display: flex; justify-content: space-between; font-size: x-small;"> <div>Center 2.402 GHz #Res BW 100 kHz</div> <div>#VBW 300 kHz</div> <div>Span 3 MHz Sweep 1.067 ms</div> </div> <table border="0" style="width: 100%; font-size: x-small; margin-top: 5px;"> <tr> <td style="width: 33%;">Occupied Bandwidth</td> <td style="width: 33%;">Total Power</td> <td style="width: 33%;">3.81 dBm</td> </tr> <tr> <td style="text-align: center;"><b>1.0701 MHz</b></td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>13.356 kHz</td> <td>OBW Power</td> </tr> <tr> <td>x dB Bandwidth</td> <td>663.2 kHz</td> <td>x dB</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">99.00 %</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">-6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin-top: 5px;">MSG STATUS</p> </div>	Occupied Bandwidth	Total Power	3.81 dBm	<b>1.0701 MHz</b>			Transmit Freq Error	13.356 kHz	OBW Power	x dB Bandwidth	663.2 kHz	x dB			99.00 %			-6.00 dB
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MCH	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: small; margin: 0;">RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 06:37:00 PM Sep 21, 2020</p> <p style="margin: 0;">Center Freq: 2.440000000 GHz Center Freq: 2.440000000 GHz Radio Std: None                      Trig: Free Run AvgHold: 1/1                      #IFGain: Low #Atten: 30 dB Radio Device: BTS</p> <div style="display: flex; justify-content: space-between;"> <div style="font-size: x-small;">                         10 dB/div                          Log                          Ref Offset 8.05 dB                          Ref 20.00 dBm                     </div> <div style="text-align: right;">                         Mkr1 2.4400135 GHz                          -2.7263 dBm                     </div> </div> <div style="display: flex; justify-content: space-between; font-size: x-small;"> <div>Center 2.44 GHz #Res BW 100 kHz</div> <div>#VBW 300 kHz</div> <div>Span 3 MHz Sweep 1.067 ms</div> </div> <table border="0" style="width: 100%; font-size: x-small; margin-top: 5px;"> <tr> <td style="width: 33%;">Occupied Bandwidth</td> <td style="width: 33%;">Total Power</td> <td style="width: 33%;">3.87 dBm</td> </tr> <tr> <td style="text-align: center;"><b>1.0799 MHz</b></td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>14.107 kHz</td> <td>OBW Power</td> </tr> <tr> <td>x dB Bandwidth</td> <td>671.5 kHz</td> <td>x dB</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">99.00 %</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">-6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin-top: 5px;">MSG STATUS</p> </div>	Occupied Bandwidth	Total Power	3.87 dBm	<b>1.0799 MHz</b>			Transmit Freq Error	14.107 kHz	OBW Power	x dB Bandwidth	671.5 kHz	x dB			99.00 %			-6.00 dB
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		-6.00 dB																	



**A.5 Occupied Bandwidth**

Mode	Channel	Occupied Bandwidth [MHz]	Verdict
BT LE	LCH	1.0533	PASS
BT LE	MCH	1.0604	PASS
BT LE	HCH	1.0542	PASS

Test Graphs

LCH	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.40200000 GHz</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>Center 2.402 GHz #Res BW 30 kHz</p> <p>Span 4 MHz Sweep 4.267 ms</p> <p>#VBW 100 kHz</p> <p>Occupied Bandwidth <b>1.0533 MHz</b></p> <p>Total Power 4.14 dBm</p> <p>Transmit Freq Error 14.571 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 362.2 kHz</p> <p>x dB -6.00 dB</p>	<p>Frequency</p> <p>Center Freq 2.40200000 GHz</p> <p>CF Step 400.000 kHz</p> <p>Freq Offset 0 Hz</p>
	<p>MSG</p> <p>STATUS</p>	
MCH	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.44000000 GHz</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>Center 2.44 GHz #Res BW 30 kHz</p> <p>Span 4 MHz Sweep 4.267 ms</p> <p>#VBW 100 kHz</p> <p>Occupied Bandwidth <b>1.0604 MHz</b></p> <p>Total Power 4.18 dBm</p> <p>Transmit Freq Error 12.940 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 308.5 kHz</p> <p>x dB -6.00 dB</p>	<p>Frequency</p> <p>Center Freq 2.44000000 GHz</p> <p>CF Step 400.000 kHz</p> <p>Freq Offset 0 Hz</p>
	<p>MSG</p> <p>STATUS</p>	



HCH

Agilent Spectrum Analyzer - Occupied BW

<input type="checkbox"/> RL	<input type="checkbox"/> RF	<input type="checkbox"/> 50 Ω	<input type="checkbox"/> AC	<input type="checkbox"/> SENSE:INT	<input type="checkbox"/> ALIGN:AUTO	06:33:05 PM Sep 21, 2020
<b>Center Freq 2.480000000 GHz</b>				Center Freq: 2.480000000 GHz	Radio Std: None	Frequency
				Trig: Free Run	AvgHold: 10/10	Center Freq 2.480000000 GHz
				#IFGain:Low	#Atten: 30 dB	
				Radio Device: BTS		CF Step 400.000 kHz Auto Man

10 dB/div      Ref Offset 8.05 dB  
Log              Ref 20.00 dBm

Center 2.48 GHz      Span 4 MHz  
#Res BW 30 kHz      #VBW 100 kHz      Sweep 4.267 ms

<b>Occupied Bandwidth</b>	<b>Total Power</b>	<b>4.23 dBm</b>
<b>1.0542 MHz</b>		
Transmit Freq Error	13.634 kHz	OBW Power
x dB Bandwidth	472.7 kHz	x dB
		99.00 %
		-6.00 dB

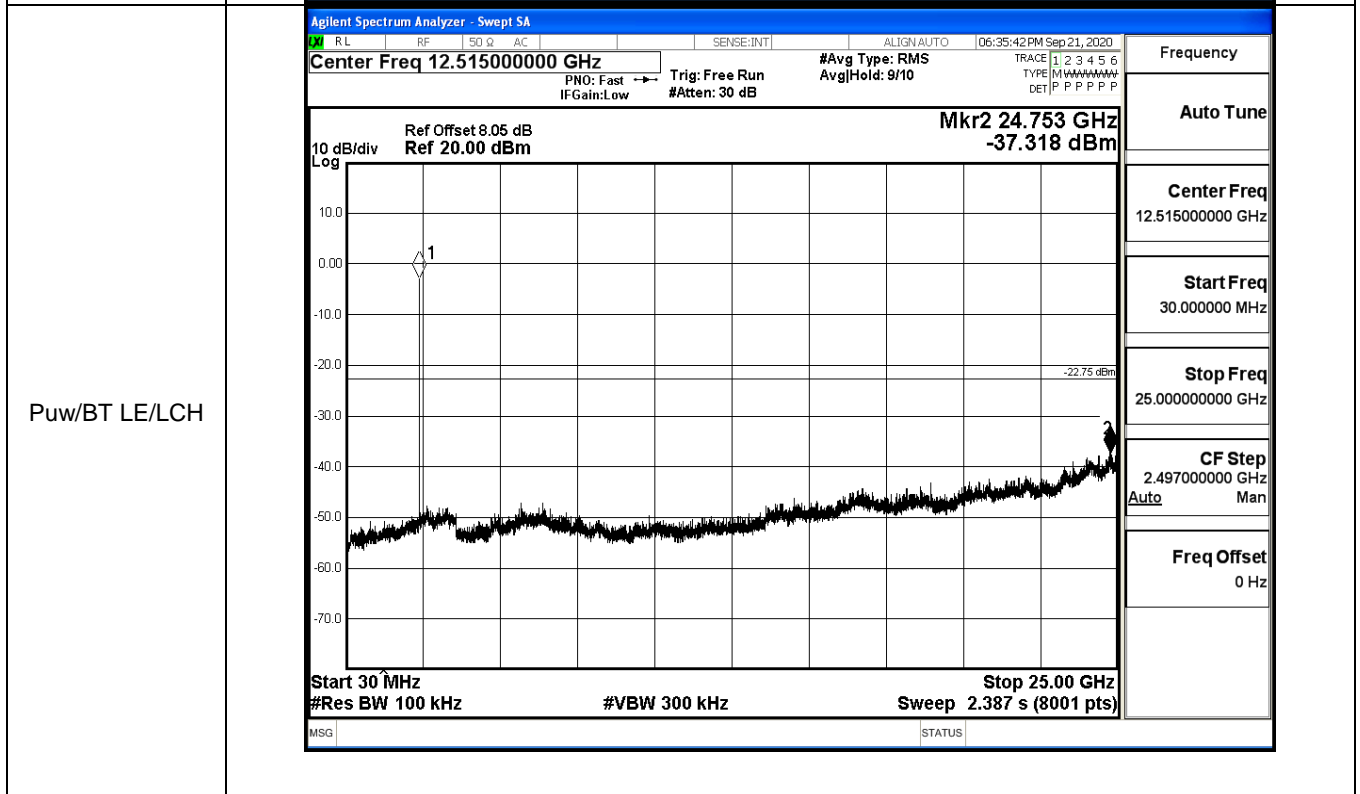
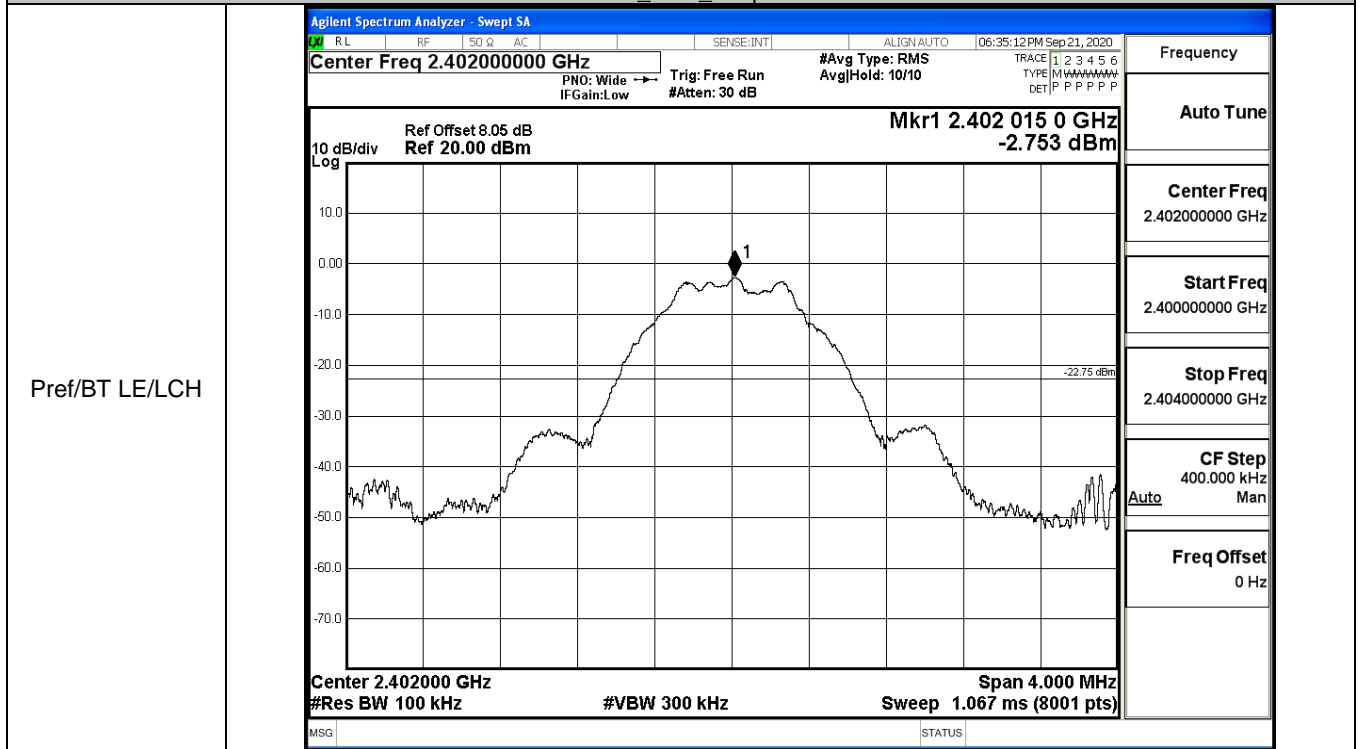
MSG

STATUS

### A.6 RF Conducted Spurious Emissions

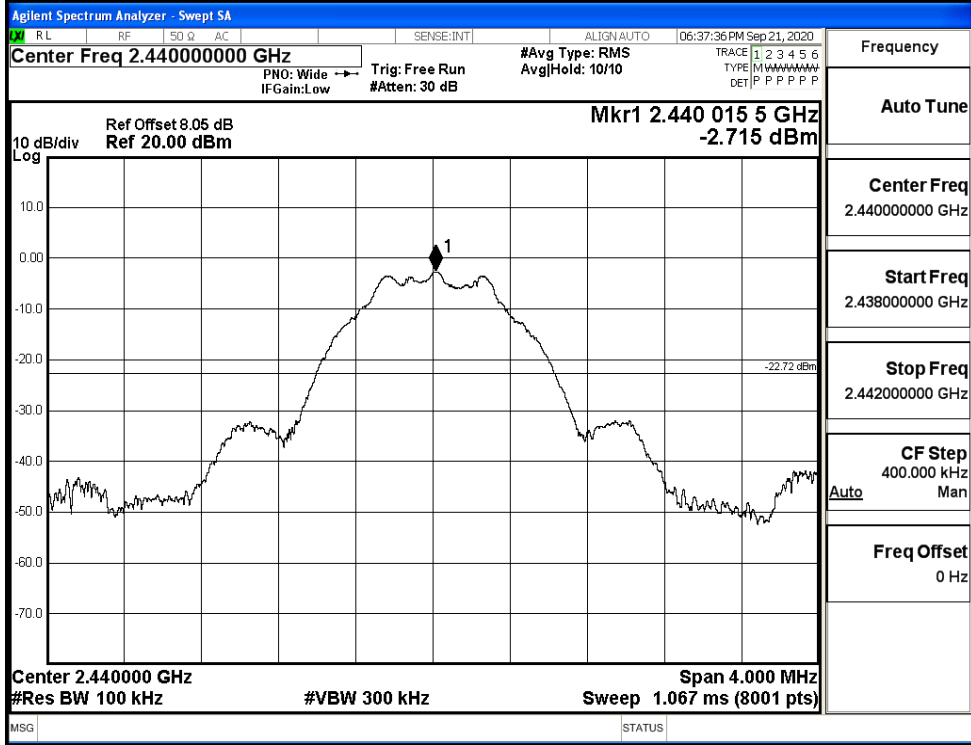
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-2.753	-37.318	-22.753	PASS
BT LE	MCH	-2.715	-37.554	-22.715	PASS
BT LE	HCH	-2.669	-37.314	-22.669	PASS

BT LE\_LCH\_Graphs



BT LE\_MCH\_Graphs

Pref/BT LE/MCH

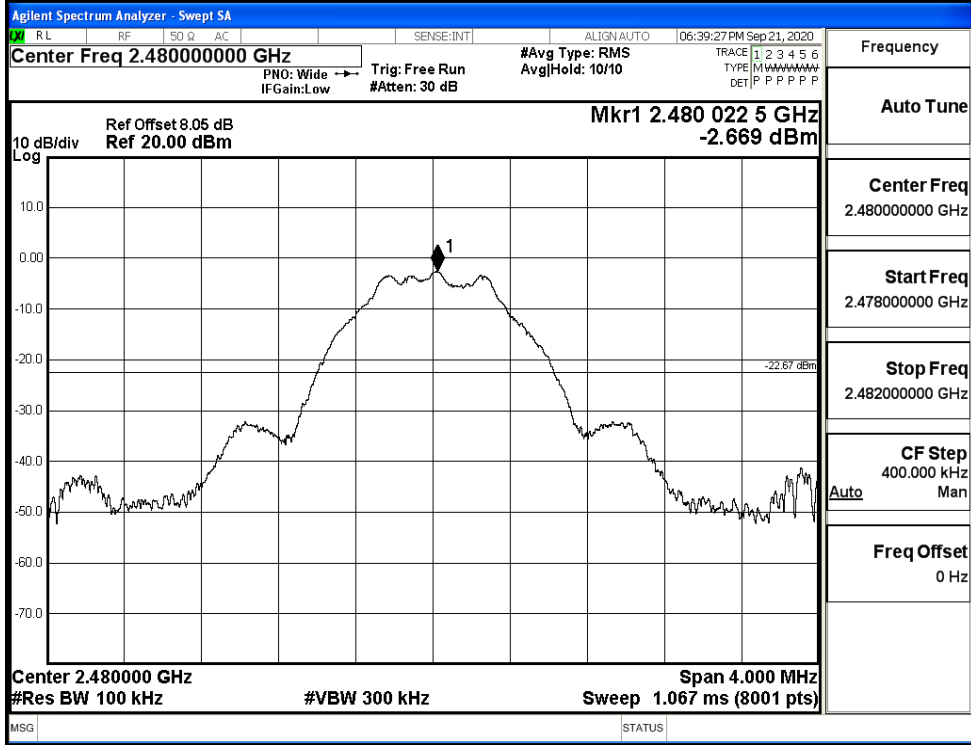


Puw/BT LE/MCH



BT LE\_HCH\_Graphs

Pref/BT LE/HCH



Puw/BT LE/HCH



### A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-2.891	-49.731	-22.89	PASS
BT LE	HCH	-2.647	-46.591	-22.65	PASS

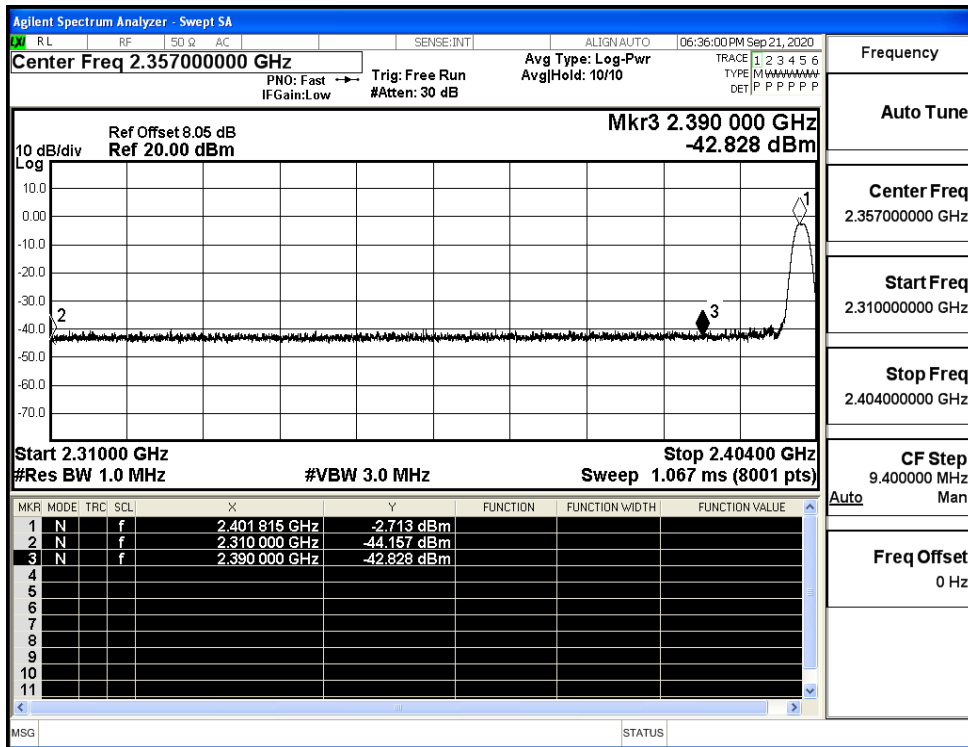
Test Graphs

LCH	<p>Agilent Spectrum Analyzer - Swept SA                  Center Freq 2.35700000 GHz                  Mkr4 2.355 379 GHz -49.731 dBm                  Start 2.31000 GHz Stop 2.40400 GHz                  #Res BW 100 kHz #VBW 300 kHz Sweep 9.067 ms (8001 pts)</p> <table border="1" style="font-size: small;"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SCL</th> <th>X</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr><td>1</td><td>N</td><td>f</td><td></td><td>2.402 014 GHz</td><td>-2.891 dBm</td><td></td><td></td><td></td></tr> <tr><td>2</td><td>N</td><td>f</td><td></td><td>2.400 000 GHz</td><td>-44.171 dBm</td><td></td><td></td><td></td></tr> <tr><td>3</td><td>N</td><td>f</td><td></td><td>2.390 000 GHz</td><td>-53.459 dBm</td><td></td><td></td><td></td></tr> <tr><td>4</td><td>N</td><td>f</td><td></td><td>2.355 379 GHz</td><td>-49.731 dBm</td><td></td><td></td><td></td></tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	f		2.402 014 GHz	-2.891 dBm				2	N	f		2.400 000 GHz	-44.171 dBm				3	N	f		2.390 000 GHz	-53.459 dBm				4	N	f		2.355 379 GHz	-49.731 dBm				Frequency Auto Tune Center Freq 2.35700000 GHz Start Freq 2.310000000 GHz Stop Freq 2.404000000 GHz CF Step 9.400000 MHz Freq Offset 0 Hz
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4	N	f		2.355 379 GHz	-49.731 dBm																																										
HCH	<p>Agilent Spectrum Analyzer - Swept SA                  Center Freq 2.48900000 GHz                  Mkr4 2.483 901 50 GHz -46.591 dBm                  Start 2.47800 GHz Stop 2.50000 GHz                  #Res BW 100 kHz #VBW 300 kHz Sweep 2.133 ms (8001 pts)</p> <table border="1" style="font-size: small;"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SCL</th> <th>X</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr><td>1</td><td>N</td><td>f</td><td></td><td>2.480 024 00 GHz</td><td>-2.647 dBm</td><td></td><td></td><td></td></tr> <tr><td>2</td><td>N</td><td>f</td><td></td><td>2.483 500 00 GHz</td><td>-51.912 dBm</td><td></td><td></td><td></td></tr> <tr><td>3</td><td>N</td><td>f</td><td></td><td>2.500 000 00 GHz</td><td>-52.558 dBm</td><td></td><td></td><td></td></tr> <tr><td>4</td><td>N</td><td>f</td><td></td><td>2.483 901 50 GHz</td><td>-46.591 dBm</td><td></td><td></td><td></td></tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	f		2.480 024 00 GHz	-2.647 dBm				2	N	f		2.483 500 00 GHz	-51.912 dBm				3	N	f		2.500 000 00 GHz	-52.558 dBm				4	N	f		2.483 901 50 GHz	-46.591 dBm				Frequency Auto Tune Center Freq 2.48900000 GHz Start Freq 2.478000000 GHz Stop Freq 2.500000000 GHz CF Step 2.200000 MHz Freq Offset 0 Hz
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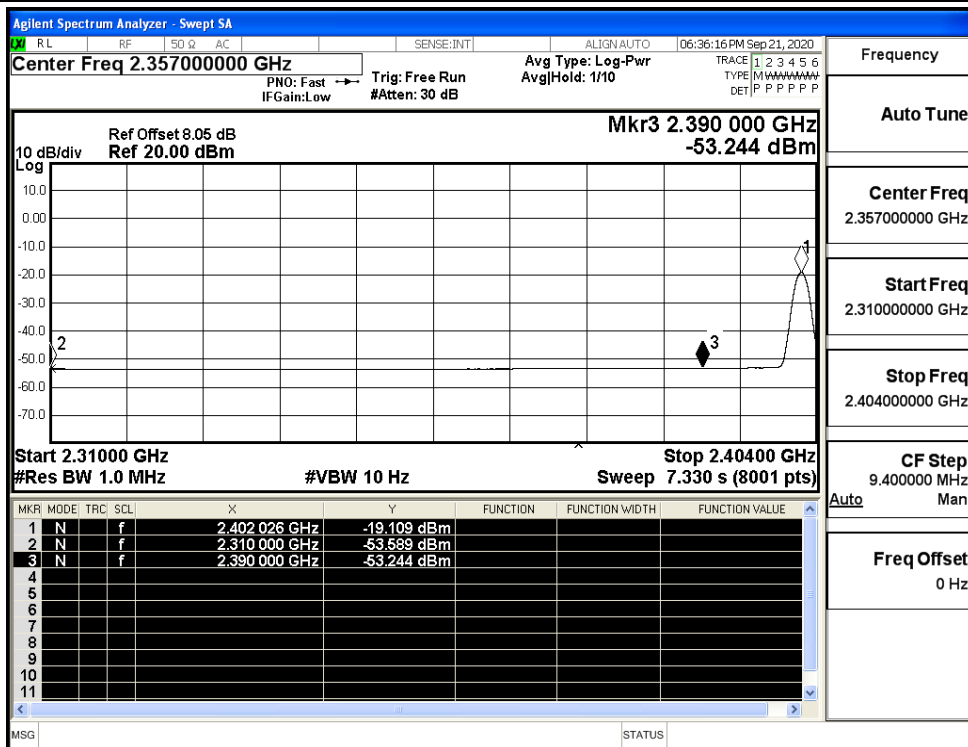
### A.8 Restrict-band band-edge measurements

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdi
BT LE	2402	Ant1	2310.0	-44.16	2.0	0	53.07	PEAK	74	PASS
		Ant1	2310.0	-53.59	2.0	0	43.64	AV	54	PASS
		Ant1	2390.0	-42.83	2.0	0	54.40	PEAK	74	PASS
		Ant1	2390.0	-53.24	2.0	0	43.99	AV	54	PASS
	2480	Ant1	2483.5	-40.36	2.0	0	56.87	PEAK	74	PASS
		Ant1	2483.5	-52.68	2.0	0	44.55	AV	54	PASS
		Ant1	2500.0	-41.92	2.0	0	55.31	PEAK	74	PASS
		Ant1	2500.0	-52.63	2.0	0	44.60	AV	54	PASS

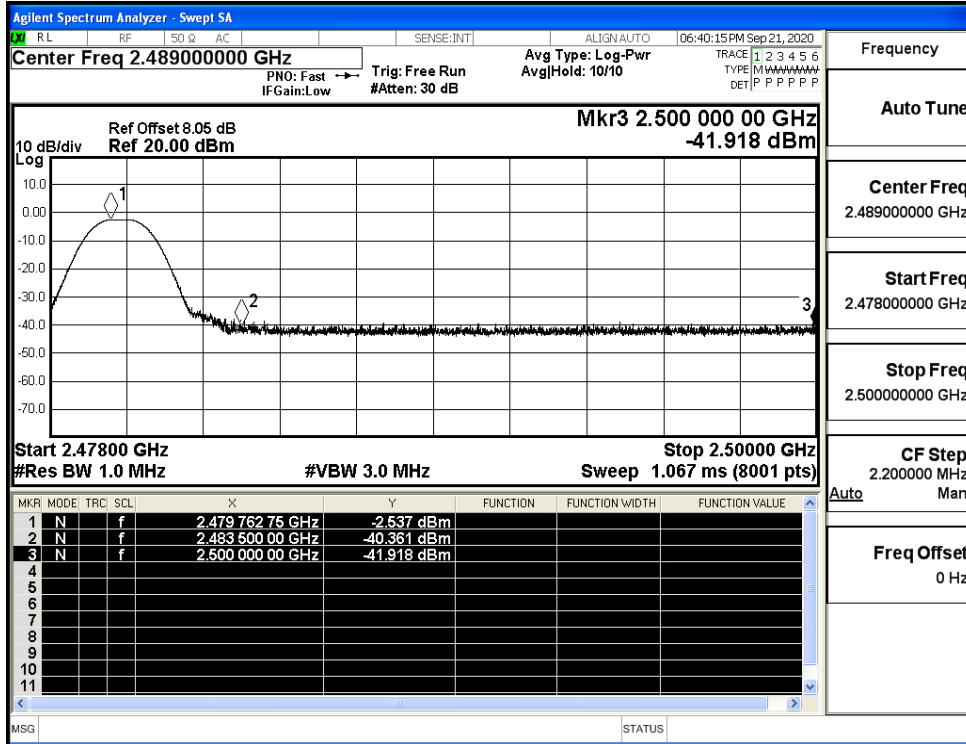
Restrict-band band-edge measurements\_BT LE\_2402\_Ant1\_PEAK



Restrict-band band-edge measurements\_BT LE\_2402\_Ant1\_AV



Restrict-band band-edge measurements\_BT LE\_2480\_Ant1\_PEAK



Restrict-band band-edge measurements\_BT LE\_2480\_Ant1\_AV

